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CA 2378970 A1 2001/02/15

(21) 2 378 970

(12) DEMANDE DE BREVET CANADIEN
CANADIAN PATENT APPLICATION

(13) A1

(86) Date de dépôt PCT/PCT Filing Date: 2000/07/13
(87) Date publication PCT/PCT Publication Date: 2001/02/15
(85) Entrée phase nationale/National Entry: 2002/02/07
(86) N° demande PCT/PCT Application No.: EP 2000/006675
(87) N° publication PCT/PCT Publication No.: 2001/010568
(30) Priorité/Priority: 1999/08/07 (199 37 467.8) DE

(51) Cl.Int.^{7}/Int.Cl.^{7} B05C 1/00, B05C 1/08

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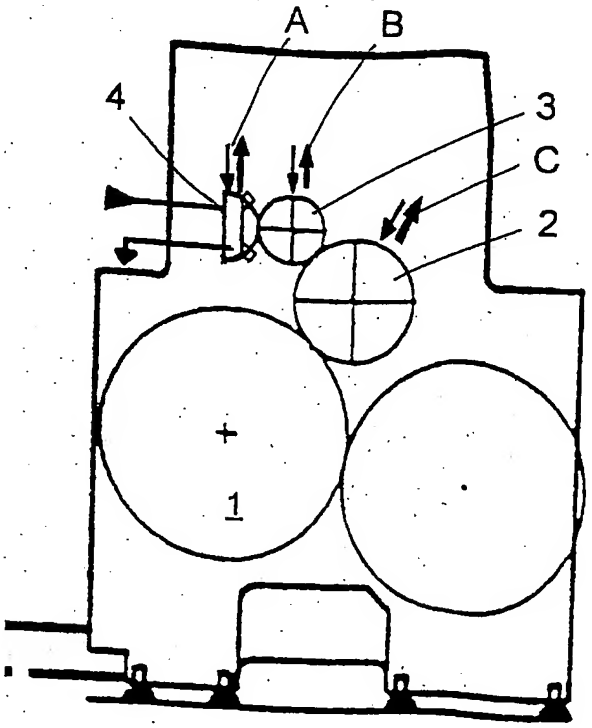
(54) Titre : DISPOSITIF DE TEMPERATION DE MILIEUX DE REVETEMENT
(54) Title: DEVICE FOR THE TEMPERATURE EQUALISATION OF COATING MEDIA



(57) Abrégé/Abstract:
The invention relates to the temperature equalisation of coating media for improving the processability of said coating media in an application unit. Heat supply or removal devices (A, B, C) which operate directly from the outside or the inside are associated to guiding elements (1, 2, 3, 4) for the coating media in order to prevent any efficiency loss. Temperature of the coating medium is modified according to the temperature measurement carried out in the coating medium, and optionally in the guiding elements (1, 2, 3 or 4) for said coating medium.

ABSTRACT

Temperature control of the coating medium is performed to influence the processability of coating media in an applicator system. In order to operate without losing efficiency, devices acting directly from the inside or the outside for heat supply or dissipation are connected to the elements guiding the coating medium. The temperature of the coating medium is influenced by measuring the temperature within the coating medium and, if necessary, at the elements guiding the coating medium.

DEVICE FOR TEMPERATURE CONTROL OF COATING MEDIA

BACKGROUND OF THE INVENTION

1. Field of the invention

The invention pertains to a device for temperature control of coating media according to the preamble of Claim 1.

2. Description of Prior Art

In applicator systems for printing presses, e.g., in coating systems, it is known to regulate the viscosity of the coating medium by means of temperature control. Temperature control can be used to regulate the processability of coating media for different types of media and for different methods of application. This can expand the processing range of such an applicator system.

A device for coating a surface in a printing process is known, e.g., from US 5,520,739 A. This document describes that a coating composition for different systems can be supplied from a single storage container for the feeding of coating compositions to printing processes. Each device for supplying the coating composition is described as a reactor vessel, in which the temperature, and thus also the viscosity, of the coating composition can be influenced. For this purpose, there is a heat exchanger and a temperature sensor, as well as a viscometer for determining the viscosity of the coating composition, in the reactor vessel.

The described device has the disadvantage that the coating composition can only be influenced before the actual printing process or coating process. On the way between the reactor vessel and the printing process, the physical properties of the coating composition can change.

Another disadvantage of the described device is that not all of the processing sequences can be affected by the processing sequences of temperature control. It is necessary, e.g., for there to be sequences for the rinsing or cleaning of the applicator system and the elements contained therein that transport the coating composition in order to prevent permanent

contamination through hardening of the coating composition. Here, it is advantageous to influence the temperature of the cleaning process. This is not possible with the described device.

SUMMARY OF THE INVENTION

The objective of the invention is to influence the temperature control of a coating medium near the printing process and also to provide means that can support the cleaning processes also by means of temperature-control mechanisms.

The achievement of this objective is configured according to the characteristics of Claim 1. Here, it is advantageous if the temperature control of the coating composition is no longer performed in a storage container, but instead directly at the place of processing. Suitable positions for temperature control are a chamber wiper, a screen roller connected to the chamber wiper, or, if necessary, a metering roller connected to the screen roller or to a comparable applicator roller. It is also advantageous if the form cylinder transferring the coating layer or the coating medium is realized as a device for temperature control. In a suitable form, there can be a heat exchanger within each roller or chamber wiper. In an additional suitable form, the temperature is detected at each element transmitting the coating medium.

BRIEF DESCRIPTION OF THE DRAWING

The invention will be explained in more detail in the following with reference to drawing.

Figure 1, an applicator system with temperature-control devices.

An applicator system is described in Figure 1. The applicator system includes a printing cylinder 1 for guiding a sheet to be coated, a form cylinder 2 for transferring a layer of the coating medium to the sheet to be printed, and a metering system for generating the coating. In the shown case, the metering system comprises an applicator roller that is formed as a screen roller 3. Cups for the transport of the coating medium are arranged uniformly on the applicator roller. A chamber wiper 4 is adapted to this screen roller, and two wipers of the chamber wiper form a space for feeding the coating medium

together with the body of the chamber wiper. The chamber wiper 4 is set with its two wipers against the screen roller 3 and transfers the coating medium into the recesses of the screen roller 3 with the coating medium fed by means of a pump. The coating medium is released when the screen roller 3 rolls onto the surface of the form cylinder 2 to a printing form attached to the form cylinder. The printing form can be a uniform surface that coats the entire printing area of a printing sheet, or it can be provided only for parts of the printing sheet.

There are distinct temperature-control devices in the applicator system for guaranteeing uniform processing of the widest possible range of coating media.

In the region of the chamber wiper 4, a heat-exchanger device A of arbitrary known type can be inserted into or attached to the wiper body. This allows the wiper body, including the wiper connected to the body, to be set to a certain temperature that is, in turn, transferred to the coating medium in the chamber wiper 4. Thus, the coating medium continuously exhibits the preselected temperature. For this purpose, in the chamber wiper 4 there can be a temperature sensor that continuously detects the temperature of the chamber wiper 4. Furthermore, in the chamber wiper 4 there can be a temperature sensor that continuously detects the temperature of the coating medium. An arrangement with two sensors can provide permanent equalization. A controller guarantees that, if necessary, there is a sufficiently large temperature difference between the wiper body and the supplied coating medium, so that for the processing, the coating medium has the desired temperature adjusted for viscosity and transfer properties, as well as, if necessary, for drying properties.

Furthermore, the screen roller 3 can have a temperature-control device B known from inking systems of rotary printing presses. For this purpose, a series of flow channels that carry a temperature-control fluid in two directions can be formed in the screen roller 3. The flow channels are arranged such that the temperature-control fluid flows in one channel towards the screen roller 3 and in an adjacent channel, the fluid flows back in the

opposite direction. In this way, the temperature-control fluid can be input and then removed from one side of the screen roller 3.

Another possible temperature-control method consists in providing the form cylinder 2 with a temperature-control device C like those known for screen roller 3. For this purpose, there are also flow channels in the form cylinder 2 that can carry a temperature-control fluid.

Alternatively, for coating by means of a chamber wiper and a screen roller, there can also be a roller coating system. This roller coating system comprises, e.g., two rollers, of which one is the applicator roller corresponding to screen roller 3, and the second is a metering roller at the position of the chamber wiper 4. The coating medium is fed into a gap between the two rollers. By arranging temperature-control devices at both rollers, or, if necessary, only at one of the two rollers, the temperature of the coating medium to be transferred can be set precisely.

With the temperature-control devices described here, a so-called external temperature-control of the coating medium in the transport system of the coating medium can be eliminated. The coating supply devices can be of a conventional type. Obviously, it is also possible to combine the provided arrangement of temperature-control devices with external temperature-control devices. Furthermore, cleaning fluids that are to be applied to the surfaces contacting the coating medium can be preferably heated.

The temperature control can also be performed from the outside by means of radiators or by the supply of a gaseous temperature-control medium. Then the temperature control can be connected in a particularly effective way to the already metered thin films of the coating medium.

A particular advantage of the temperature control of chamber wiper 4 is that the wiper blade cannot be deformed by fluctuating temperatures. Deformation or bowing of the wiper leads to different meterings over the width of the wiper, which are hereby avoided.

The mentioned device enables processing combinations for applying different application processes of coating technology in sheet-fed offset printing presses or pure coating machines with several applicator systems. In

this way, a dispersion coating can be coated on a dispersion coating. The dispersion coating can be combined with gold varnish. A dispersion coating as the bottom layer can be combined with a UV coating. Finally, two layers of UV coating can be applied. In the case of dispersion coating, the temperature control is used to stabilize the coating properties. In the case of UV coating, the temperature control, particularly through heating, is used to improve the processing properties, e.g., of the distribution of the coating on a surface. Cooling can be performed, e.g., for an aqueous metal pigment coating or a metal pigment printing ink, because this coating or this printing ink exhibits an optimum consistency within certain temperature ranges.

The described system can be expanded by also providing roller coating systems or roller lining units with an optional, temperature-controllable coating tank that is comparable to the chamber wiper 4 or the coating supply to a so-called crushing roller system, e.g., a coating knife that dips into a coating storage tank between the two rollers forming the crushing roller system.

List of reference symbols

1	Printing cylinder
2	Form cylinder
3	Screen roller
4	Chamber wiper
A	Temperature-control unit
B	Temperature-control unit
C	Temperature-control unit

CLAIMS

1. Device for temperature-control of coating media in an applicator system comprising a sheet transport system (1), a form cylinder (2) for applying the coating medium to a printing sheet, an applicator roller (3) for applying the coating medium to the form cylinder (2) or to printing material attached to the form cylinder, a metering system for fixing the amount of coating medium to be transferred to the applicator roller (3), and a system (4) for supplying a coating medium to the applicator system, wherein there are means for detecting the temperature of the coating medium and means for influencing the temperature of the coating medium in the region of the transport path of the coating medium, characterized in that one or more of the elements (2; 3; 4) contacting the coating medium for metering or for metered transport are connected to a device (A; B; C) for heat supply or dissipation, such that the temperature of the coating medium can be influenced during metering or in the metered state essentially just before application onto the printing material.

2. Device according to Claim 1, characterized in that the device for heat supply or dissipation is connected to at least one of the elements: chamber wiper (4) and/or screen roller (3) and/or applicator roller and/or metering roller and/or form cylinder (2).

3. Device according to Claim 2, characterized in that the device (A; B; C) for heat supply or dissipation is arranged within at least one of the elements guiding the coating medium.

4. Device according to Claim 3, characterized in that the device (A; B; C) for heat supply or dissipation is arranged within at least one of the elements guiding the coating medium and in the form of flow channels that can carry a temperature-control medium.

5. Device according to Claim 2, characterized in that the device (A; B; C) for heat supply or dissipation is connected to at least one of the elements guiding the coating medium from the outside.

6. Device according to Claim 5, characterized in that the device (A; B; C) for heat supply or dissipation is connected to at least one of the elements guiding the coating medium from the outside in the form of a radiator or a temperature-controlled medium flow, preferably in the form of air.

7. Device according to one of Claims 1-6, characterized in that at least one sensor for detecting the temperature of the coating medium is connected to each device (A; B; C) for heat supply or dissipation.

8. Device according to Claim 7, characterized in that at least one sensor for detecting the temperature of the elements guiding the coating medium is connected to the devices (A; B; C) for heat supply or dissipation.

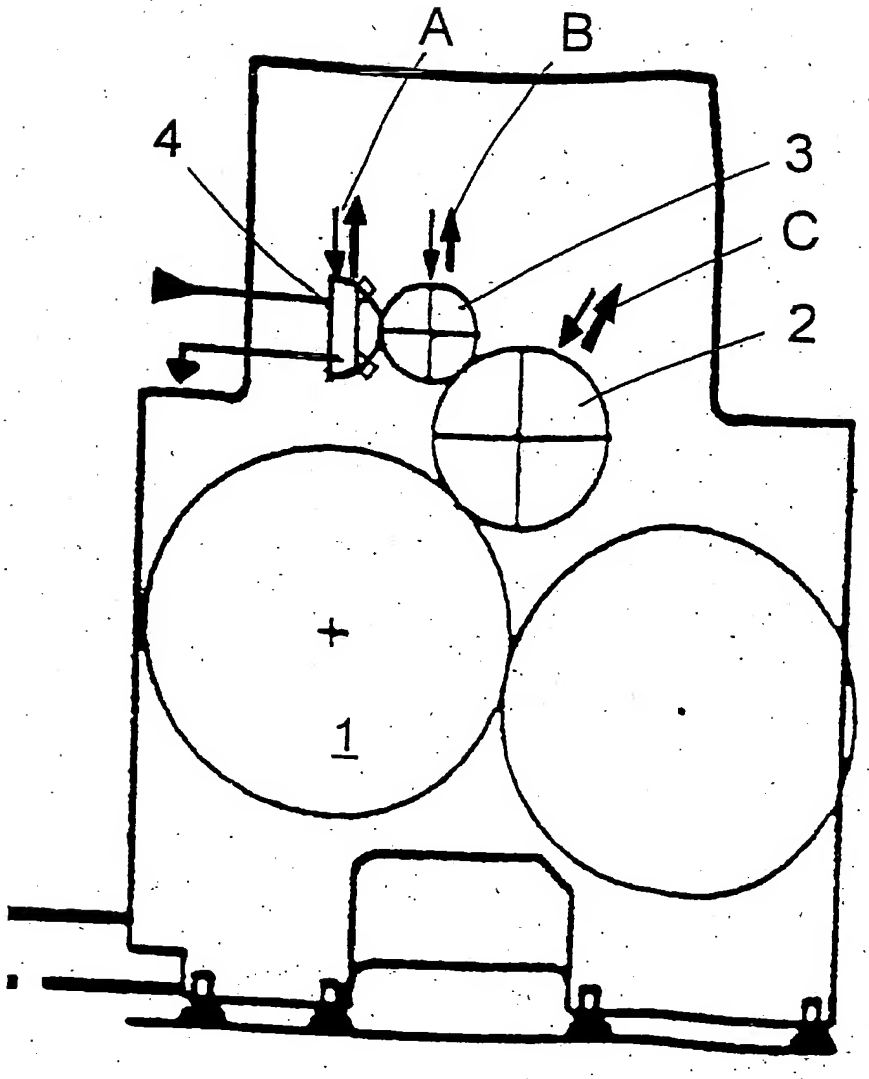


Fig. 1